

WHAT IS CLAIMED IS:

1 1. A method for processing alkene-containing exhaust
2 gas, comprising:

3 ozonation process, wherein the alkene-containing
4 exhaust gas reacts with ozone and the double bond is
5 completely oxidized and broken down into small molecules;
6 and

7 biological process, wherein the small molecules are
8 further reacted and decomposed.

1 2. The method as claimed in claim 1, wherein the ozone
2 process is carried out in an apparatus selected from the
3 group consisting of a gas pipe, a packed column and any
4 device that promotes the blending of gases and the contact
5 among gases.

1 3. The method as claimed in claim 2, wherein the
2 equipment that promotes the contact among gases is selected
3 from the group consisting of venturi pipes and static
4 blender.

1 4. The method as claimed in claim 3, the material of
2 the venturi pipes and static blender is selected from the
3 group consisting of stainless steel and other material that
4 is resistant to ozone.

1 5. The method as claimed in claim 2, the processing
2 equipment filled with a filler is selected form the group
3 consisting of packed columns and sieve plate columns.

1 6. The method as claimed in claim 5, wherein the
2 material of the filler or the sieve plate of the sieve plate
3 column is selected from the group consisting of stainless
4 steel and other material that is resistant to ozone.

1 7. The method as claimed in claim 4 or 6, wherein the
2 filler, sieve plate, venturi pipe and the static mixer
3 further comprise a catalytic substance that accelerates the
4 decomposition of ozone.

1 8. The method as claimed in claim 1, further
2 comprising a step of decomposing residual ozone before the
3 exhaust gas entering the biological process.

1 9. The method as claimed in claim 8, wherein the
2 decomposition of the residual ozone is carried out in a
3 filter material compost compartment.

1 10. The method as claimed in claim 9, wherein the
2 material filling the filter material compost compartment is
3 selected from the group consisting of organic substances and
4 other substances that decompose ozone.

1 11. The method as claimed in claim 10, wherein the
2 substance that decomposes ozone is activated carbon, MnO_2 ,
3 $\text{FeO}(\text{OH})$, or Ag .

1 12. The method as claimed in claim 1, wherein the
2 biological process is carried out in a device selected from
3 the group consisting of bio-filter, a bio-trickling filter
4 and a bio-scrubber.

1 13. The method as claimed in claim 12, wherein the
2 means by which the exhaust is introduced into the bio-filter
3 bed is selected from the group consisting of upflow and
4 downflow.

1 14. The method as claimed in claim 12, wherein the
2 means by which the exhaust gas is introduced into the bio-
3 trickling filter or the bio-scrubber is selected from the
4 group consisting of upflow, downflow and crossflow.

1 15. The method as claimed in claim 1, wherein the
2 ozonic process equipment and the biological process
3 equipment are combined as a single apparatus.

1 16. The method as claimed in claim 1, wherein the
2 ozonic process equipment and the biological process
3 equipment are two individual apparatus.

1 17. The method as claimed in claim 1, wherein the
2 alkene-containing exhaust gas comprises styrene, butadiene,
3 norbornene, and acrylates.

1 18. The method as claimed in claim 17, wherein the
2 acrylates are acrylic acetate and butyl acrylate.

1 19. The method as claimed in claim 1, wherein the
2 noxious component of the alkene-containing exhaust gas is
3 hydrogen sulfide, methanethiol, ethanethiol and dimethyl
4 sulfide.

1 20. The method as claimed in claim 1, wherein the
2 amount of ozone added is 0.1~10 times that of the pollutant.

1 21. The method as claimed in claim 1, wherein the
2 amount of ozone added is 0.5~5 times that of the pollutant.

1 22. The method as claimed in claim 1, further
2 comprising a monitoring step for exhaust gas, in which the
3 pollutant concentrations before and after the process are
4 observed to adjust the ozone supply accordingly.

1 23. The method as claimed in claim 22, wherein the
2 inspection item in the monitoring step is selected from the
3 group consisting of the total concentration of hydrocarbons
4 in the exhaust gas and the concentration of the compound
5 reactive with ozone.

1 24. The method as claimed in claim 22, wherein the
2 regulation of ozone supply is adjusted according to a factor
3 selected from the group consisting of the ozone
4 concentration and the flowrate of the ozone supply.